PHOTOGRAPHS AS A MEANS OF REVEALING THE ADAPTIVE FUNCTION OF MORPHOLOGICAL CHARACTERS

N.E. Vikhrev
Zoological Museum
of Moscow University, Russia
E-mail: **nikita6510@ya.ru**

Fig. 1

The ventral spine at the apex of fore tibia

Hydrophorus praecox Lehmann, 1822 (Dolichopodidae) is a common species with cosmopolitan distribution in the Old World from Scandinavia to New Zealand. Males of *H. praecox* differ from other species of *Hydrophorus* by the presence of acute ventral spine at the apex of fore tibia (*t1*) **(Fig. 1)**. It is supposed that various modifications of dipteral male legs usually are adaptations for courtship or copulating, but specific points of these adaptations are unknown in the vast majority of cases. I would like to report the function of ventral spine at the apex of *t1* in male of *H. praecox*, clarified by photo registration.

H. praecox was very common on the saltish silt of the Saloum estuary in Senegal in March 2007. I observed a lot of pairs moving together in copulating position for a long time **(Fig. 2)**, but only once a real copulation took place. I also noticed a lot of unpaired males which tried to replace the lucky males but all these attempts were unsuccessful. Thus, males *H. praecox* act in a way similar to dragonflies which also spend long time in tandem to avoid concession of female to other males **(Fig. 3)**.

Species of *Hydrophorus* feed on soft-bodied animals like Nematocera larvae or Oligochaeta worms, they find in silt or under low water **(Fig. 4)**. A female *H. praecox* could go on hunting this way even with a male riding her, but the male can neither hunt nor can afford to leave his female. The only reasonable solution was recorded on **Fig. 5**: the male moves his body far ahead and takes/steals a larva from his female's mouth.

The examination of **Figs 2 and 5** shows that while riding the female the male's body has the ability to move broadly, whilst the apex of *t1* being the only part which is always in the same position: opposite female's posterior spiracle, so that the apical ventral spine is inserted inside spiracle. Thus, the adaptive function of the apical spine on *t1* is to be a joint which helps to resist attacks of other males and, at the same time, it permits for the male body to move broadly during riding the female.

Fig. 2

H. praecox in copulating position

Fig. 3

Dragonflies *Lestes barbarus* also spend long time in tandems

Fig. 4

H. boreali with his prey — an Oligochaeta worm

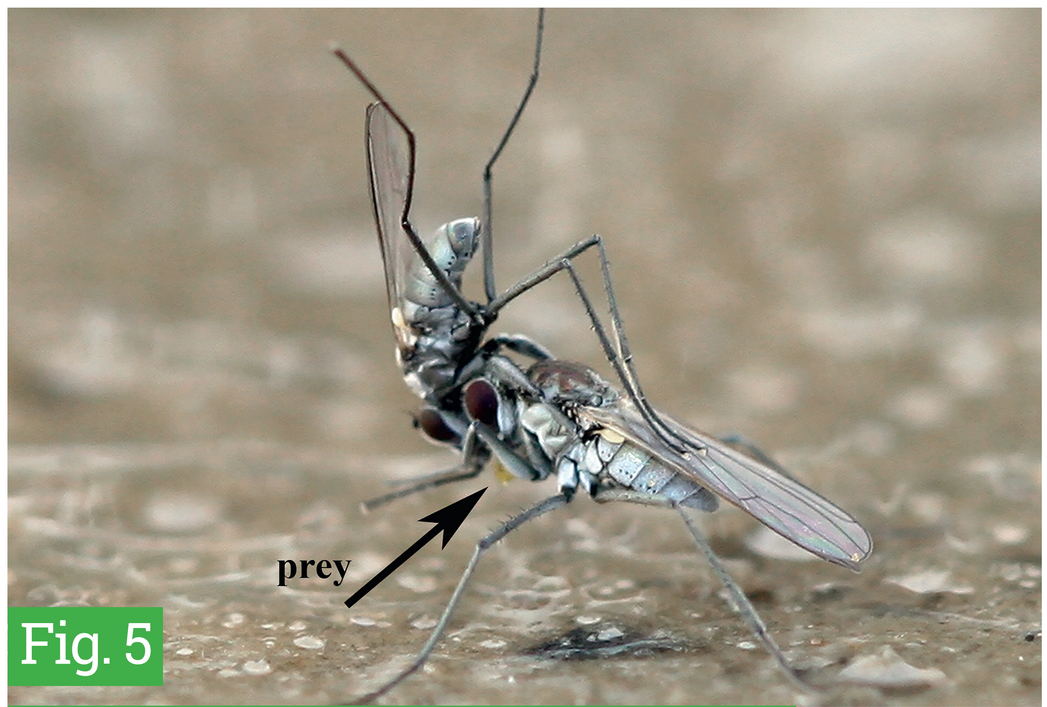

Fig. 5

A male *H. praecox* is stealing a prey from his female's mouth